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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,069	06/25/2004	Kwang-Soo Choi	1728.03	9148
29338	7590	02/23/2009	EXAMINER	
PARK LAW FIRM 3255 WILSHIRE BLVD SUITE 1110 LOS ANGELES, CA 90010			YU, GINA C	
			ART UNIT	PAPER NUMBER
			1611	
			MAIL DATE	DELIVERY MODE
			02/23/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/500,069

Applicant(s)

CHOI ET AL.

Examiner

GINA C. YU

Art Unit

1611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2, 4 and 7-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2, 4, 7-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CD/CIS)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Receipt is acknowledged of amendment filed on October 1, 2008. Claims 2, 4, 7-12 are pending. Claim rejection made under 35 U.S.C. § 112, second paragraph, as indicated in the previous Office action dated May 1, 2008, are withdrawn in view of the claim amendment made by applicant. Claim rejection made under 35 U.S.C. § 103 (a), indicated in the same Office action, is modified to address the newly amended claims. Claim objections made in the same Office action are withdrawn in part and maintained in part.

Claim Objections

Claims 2, 4, 7-10 are objected to because of the following informalities:

The use of a coordinating conjunction "and" between every species of the Markush group is grammatically incorrect. Generally, a coordinating conjunction joining three or more items creates a series and requires commas between the elements. See MPEP 2173.05(b), first paragraph, for an example of a Markush group. In the previous Office action dated May 1, 2008, examiner intended to suggest a single use of the conjunction "and" between the last two items of the Markush group, rather than using the conjunction between every species.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 2, 4, 7-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aubay et al. (US 6905814).

The amended claims recite a liquid composition for promoting plant growth, consisting essentially of titanium dioxide nanoparticles having a particle size of 3-200 nm, and silver nanoparticles having a particle size of 1-100 nm, and one or more adjuvants selected from a water soluble salt, metallic oxide, and nonmetallic oxide, used in the amount of 0.1-20 % by weight relative to the titanium dioxide nanoparticles; and one or more surfactants selected from cationic, nonionic, anionic, and amphoteric surfactants, used in the amount of 0.1-5 % by weight relative to the titanium dioxide nanoparticles.

For the purposes of searching for and applying prior art under 35 U.S.C. 102 and 103, absent a clear indication in the specification or claims of what the basic and novel characteristics actually are, "consisting essentially of" will be construed as equivalent to "comprising." See MPEP § 2111.03.

Aubay discloses a composition comprising film-forming titanium dioxide nanoparticle dispersion for cleaning and disinfecting surfaces along with PH regulating acids, alkali metal hydroxides, and surfactants. See col. 2, line 36-col. 3, line 23. The prior art is used to cleanse and disinfect the surface of plants. See col. 1, lines 39 – 46.

The reference fails to teach silver nanoparticles.

Batarsch teaches microbicidal composition comprising potassium sodium tartrate and a metal ion complex for fresh or cut flowers and plants. See abstract. The reference teaches using microbicidal metal ions such as colloidal silver and titanium, copper, zinc, manganese, etc. See col. 3, line 13 - col. 4, line 55. The reference also teaches that the formulations can be used as "an agent to control pets, insects, and/or

microorganisms and thus preserves a living plant and protects the plant from plant diseases, bacteria, virus, fungus, algae, insects, and the like". See col. 6, lines 1 - 17. Diluting the composition for the use on plant of flowers is also mentioned. See col. 6, lines 14 - 17. The reference also reports that colloidal silver is a pure, all-natural substance consisting of sub-microscopic clusters of silver ions held in aqueous suspension having a powerful prophylactic antibiotic which was used for years with no known side effects. See col. 2, lines 19 -31.

It would have been obvious to one of ordinary skill in the art at the time of the present invention to modify the teachings of Aubay by incorporating silver nanoparticles as motivated Batarsch because both references teach disinfection aqueous suspensions comprising metal particles and Batarsch teaches that colloidal silver has long been used as antibiotic for plants. The skilled artisan would have had a reasonable expectation of successfully producing an aqueous dispersion comprising titanium dioxide nanoparticles and colloidal silver with enhanced disinfecting properties for plants.

With respect to claims 8, 10-12, the terms "necessary for plant growth", "for greater effect on crop yield" and "for absorbing to plant" denote the intended use or purpose of the claimed compositions, and do not afford any patentable weight. See MPEP § 2111.02.

Response to Arguments

Applicant's arguments with respect to claims 2, 4, 7-11 have been considered but are unpersuasive.

Applicant argues the Aubay patent does not anticipate or implies the claimed invention, and point out that the prior art composition consist of certain essential features. The transitional phrase “consisting essentially of” limits the scope of a claim to the specified materials or steps “and those that do not materially affect the basic and novel characteristic(s)” of the claimed invention. See In re Herz, 537 F.2d 549, 551-52, 190 USPQ 461, 463 (CCPA 1976) (emphasis in original) It is well settled in patent law that if an applicant contends that additional steps or materials in the prior art are excluded by the recitation of “consisting essentially of,” applicant has the burden of showing that the introduction of additional steps or components would materially change the characteristics of applicant’s invention. See In re De Lajarte, 337 F.2d 870, 143 USPQ 256 (CCPA 1964). In this case, the prior art teaches that the composition contains titanium dioxide nanoparticles of the overlapping particle size limitation as presently claimed; adding alkali metal oxide and surfactants are also taught. While applicant asserts that an organic or organosiloxane polymer is an essential ingredient in Aubay for achieving the purpose of the prior art, applicant does not show how the presence of the film-forming organic or organosiloxane polymer in the present invention would **materially affect the basic and novel characteristic of the presently claimed invention**. In this case, the basic and novel characteristic of the present invention is viewed the use of titanium dioxide nanoparticles to increase the photosynthetic efficiency. There is nothing in the record to indicate that the presence of the Aubay polymer in the present invention would somehow interfere with the efficacy of titanium dioxide nanoparticles. On the contrary, it is viewed that the Aubay composition has the

same basic novel characteristics that would naturally flow from using titanium dioxide nanoparticles, as well as better adhesion of titanium dioxide to a substrate by the use of the film-forming polymer, thus providing enhanced efficacy of the active ingredient.

The addition of silver nanoparticles to the composition to improve the Aubay invention would have been obvious in view of Batarsch, as discussed above in the rejection. Maintaining the obviousness rejection is deemed proper.

Conclusion

No claims are allowed.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GINA C. YU whose telephone number is (571)272-8605. The examiner can normally be reached on Monday through Friday, from 9:00AM until 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sharmila Landau can be reached on 571-272-0614. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Gina C. Yu/
Primary Patent Examiner, Art Unit 1611